UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/676,205	09/30/2003	Masatsugu Okazaki	393032041500	7106

7590 04/24/2007

David L. Fehrman
Morrison & Foerster LLP
35th Floor
555 W. 5th Street
Los Angeles, CA 90013

EXAMINER	
QIN, JIANCHUN	
ART UNIT	PAPER NUMBER
2837	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/24/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/676,205	OKAZAKI ET AL.	
	Examiner	Art Unit	
	Jianchun Qin	2837	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 March 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,6-11 and 33-44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *10;11 and 38-44* is/are allowed.

6)☒ Claim(s) *1,2,6,7,9 and 33-37* is/are rejected.

7)☒ Claim(s) *8* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 2, 7 and 33-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (U.S. Pat. No. 5489746, hereafter referred to as Suzuki I) in view of Suzuki et al. (U.S. Pat. No. 5831193, hereafter referred to as Suzuki II) and McDowell (U.S. Pat. No. 6931370).

With respect to claim 1:

Suzuki I discloses a tone generation apparatus comprising: a memory capable of storing n bits data per address, said memory storing a plurality of compressed waveform data segmented into a plurality of frames (col. 1, lines 60-67; col. 2, lines 20-

40; col. 4, lines 54-61), wherein a number of bits per sample of the compressed waveform data is variable between the frames, but uniform within each of the frames (Figs. 2 and 3; col. 3, lines 50-59; col. 4, lines 28-56), and each of the frames includes, in a predetermined layout, an auxiliary information area (Fig.2, HB0 to HB3) for storing auxiliary information that includes compression-related information to be used for decompressing the compressed waveform data, and a data area for storing a plurality of samples of the compressed waveform data of the frame, wherein said compression-related information includes number-of-bits information indicative of said number of bits per sample within the corresponding one of the frames (cols. 3-4, lines 60-24; col. 7, lines 11-24; col. 12, lines 3-26; col. 17, lines 34-61); a readout section that designates, on the basis of a readout address, any one of the frames to be read out and reads out stored data of the designated frame from said memory address by address (Figs. 1 and 4; col. 7, lines 1-10); an auxiliary information retrieval section that, of the data of the frame read out by said readout section, retrieves the auxiliary information from the auxiliary information area (Figs. 1 and 4; col. 7, lines 11-24); a compressed waveform data retrieval section that, of the data of the frame read out by said readout section, retrieves the samples of the compressed waveform data from the data area in accordance with the number of bits per sample designated by said number-of-bits information included in the auxiliary information retrieved by said auxiliary information retrieval section (Figs. 1 and 4; col. 7, lines 4-35); a decoding section that decompresses each of the samples of the compressed waveform data retrieved by said compressed waveform data retrieval section (Figs. 1 and 4; col. 7, lines 25-35); and a

tone generation section that generates a tone on the basis of the waveform data decompressed by said decoding section (Figs. 1 and 4; col. 7, lines 36-44).

Suzuki I does not mention expressly: an address generation section that generates, every sampling cycle, a readout address varying at a predetermined rate corresponding to a designated tone pitch; irrespective of the number of bits per sample of compressed waveform data stored in said data area of each frame, each frame is stored over said predetermined number j of successive addresses, and wherein said auxiliary information area and data area in each frame are fixed in position irrespective of the number of bits per sample of compressed waveform data stored in the frame.

Suzuki II discloses a method and device for forming a tone waveform, an teaches: an address generation section that generates, every sampling cycle, a readout address varying at a predetermined rate corresponding to a designated tone pitch (cols. 18-19, lines 54-3).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Suzuki II in the combination of Suzuki I and McDowell in order to generate a readout address such that the pitch of the readout waveform can be controlled in accordance with a desired reproduction rate (Suzuki II, col. 5, lines 35-45; col. 19, lines 1-3).

McDowell teaches a data form for storing compressed data in a memory (col. 5, lines 18-21), wherein said data is packed into a plurality of data frames (col. 3, lines 25-28), including auxiliary information area and data area in each frame (Fig. 6); wherein irrespective of the number of bits per sample of compressed data stored in said data

area of each frame, each frame is stored over a predetermined number j of successive addresses, and wherein said auxiliary information area and data area in each frame are fixed in position irrespective of the number of bits per sample of compressed waveform data stored in the frame (Figs. 6 and 7; cols. 9-10, lines 65-33)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Suzuki I to allocate a fixed size of data area for each frame, as taught by McDowell, such that the algorithm for retrieving the stored data can be simplified and the retrieval can be speeded up significantly (McDowell, cols. 5-6, lines 63-3).

With respect to claim 2:

Suzuki I teaches: the data area region in each of said plurality of addresses compactly stores a plurality of samples of the compressed waveform data (Figs. 2 and 3; col. 1, lines 60-67; col. 2, lines 20-40; col. 3, lines 36-43; col. 4, lines 54-61).

Suzuki I does not mention expressly: wherein said data area ranges over a plurality of addresses in the j successive addresses irrespective of the number of bits per sample of the compressed waveform data stored in the data area of each frame.

The teaching of McDowell includes: said data area ranges over a plurality of addresses in the j successive addresses irrespective of the number of bits per sample of the compressed data stored in the data area of each frame (Figs. 6 and 7; cols. 9-10, lines 65-33)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Suzuki I to allocate a fixed size of data

area for each frame, irrespective of the number of bits per sample of the compressed data stored in each frame, as taught by McDowell, such that the algorithm for retrieving the stored data can be simplified and the retrieval can be speeded up significantly (McDowell, cols. 5-6, lines 63-3).

With respect to claim 7:

Suzuki I further discloses: a compressed data structure as claimed in claim 1, wherein m bits of the n bits (where m<n) in the j addresses of said memory contain said data area, and a remaining "n-m" bits of the n bits in the j addresses of said memory contain said auxiliary information area (Fig. 2, col. 17, lines 49-60).

With respect to claims 33 and 34:

Suzuki I further discloses: said compression-related information further includes decompression parameters to be used for the decompression of said compressed waveform in the corresponding one of the frames (cols. 15-16, lines 60-14; col. 17, lines 34-60); said auxiliary information further includes loop addresses to be used for generation of a tone (col. 17, lines 34-60).

With respect to claims 35-37:

Suzuki I further disclose: said compression-related information further includes decompression parameters to be used for the decompression of said compressed waveform in the corresponding one of the frames, and said decoding section decompressed each of the samples of the compressed waveform data, using the decompression parameters included in the auxiliary information retrieved by said auxiliary information retrieval section (col. 7, lines 11-35; cols. 15-16, lines 60-14; col.

17, lines 34-60); said decompression parameters are parameters created on the basis of compression parameters used in compressing original waveform data to create said compressed waveform data (col. 7; lines 25-35; col. 17, lines 34-60); said decompression parameters are loop addresses for repetitively reading out said compressed waveform data (col. 7, lines 25-35; col. 17, lines 34-60).

4. Claims 6 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki I in view of McDowell.

With respect to claim 6:

Suzuki I discloses a waveform storage processing apparatus comprising: a compression processing section that compresses a plurality of samples of waveform data (col. 1, lines 17-24; col. 3, lines 36-43; col. 4, lines 54-61); a framing section that segments the plurality of samples of waveform data, compressed by said compression processing section, into a plurality of frames to thereby from the frames (col. 3, lines 50-59; col. 4, lines 54-56), wherein each of the frames has a fixed total number of bits and includes a fixed auxiliary information area and remaining data area, by packing the compressed and segmented waveform data into the data area and packing compression-related information into the auxiliary information area, wherein a number of bits per sample of the packed waveform data is uniform within each of the frames but variable between the frames, and said compression-related information includes number-of-bits information indicative of said number of bits per sample within the corresponding one of the frames and decompression parameters to be used for the decompression of said compressed waveform data in the corresponding one of the

frames (Figs. 1-3; col. 3, lines 50-59; col. 4, lines 28-56; col. 3, lines 50-59; col. 4, lines 28-56; cols. 3-4, lines 60-24; col. 7, lines 11-24; col. 12, lines 3-26; col. 17, lines 34-61); and a writing section that, for each of the frames, writes the frame, formed by said framing section, into memory capable of storing n bits per address, over a predetermined number j of successive address (col. 3, lines 36-43; col. 4, lines 54-61).

Suzuki I does not mention expressly: irrespective of the number of bits per sample of compressed waveform data stored in said data area of each frame, each frame is stored over said predetermined number j of successive addresses.

McDowell teaches a data form for storing compressed data in a memory (col. 5, lines 18-21), wherein said data is packed into a plurality of data frames (col. 3, lines 25-28), including auxiliary information area and data area in each frame (Fig. 6); wherein irrespective of the number of bits per sample of compressed data stored in said data area of each frame, each frame is stored over said predetermined number j of successive addresses (Figs. 6 and 7; cols. 9-10, lines 65-33)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Suzuki I to allocate a fixed size of data area for each frame, as taught by McDowell, such that the algorithm for retrieving the stored data can be simplified and the retrieval can be speeded up significantly (McDowell, cols. 5-6, lines 63-3).

With respect to claim 9:

Suzuki I discloses a memory storing a plurality of frames of compressed waveform, said memory being capable of storing n bits data per address, said memory

storing a plurality of compressed waveform data segmented into a plurality of frames (col. 1, lines 60-67; col. 2, lines 20-40; col. 4, lines 54-61), wherein a number of bits per sample of the compressed waveform data is variable between the frames, but uniform within each of the frames (Figs. 2 and 3; col. 3, lines 50-59; col. 4, lines 28-56), each of the frames includes, in a predetermined layout, an auxiliary information area (Fig.2, HB0 to HB3) for storing auxiliary information that includes compression-related information to be used for decompressing the compressed waveform data, and a data area for storing a plurality of samples of the compressed waveform data of the frame, wherein said compression-related information includes number-of-bits information indicative of said number of bits per sample within the corresponding one of the frames (cols. 3-4, lines 60-24; col. 7, lines 11-24; col. 12, lines 3-26; col. 17, lines 34-61); wherein m bits of the n bits (where m<n) in a number of addresses of said memory contain said data area, and a remaining "n-m" bits of the n bits in the j addresses of said memory contain said auxiliary information area (Fig. 2, col. 17, lines 49-60).

Suzuki I does not mention expressly: each of the frames of the compressed waveform data is stored over a predetermined number j of successive addresses of said memory.

McDowell teaches a data form for storing compressed data in a memory (col. 5, lines 18-21), wherein said data is packed into a plurality of data frames (col. 3, lines 25-28), including auxiliary information area and data area in each frame (Fig. 6); wherein irrespective of the number of bits per sample of compressed data stored in said data

area of each frame, each frame is stored over a predetermined number j of successive addresses (Figs. 6 and 7; cols. 9-10, lines 65-33)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Suzuki I to allocate a fixed size of data area for each frame, as taught by McDowell, such that the algorithm for retrieving the stored data can be simplified and the retrieval can be speeded up significantly (McDowell, cols. 5-6, lines 63-3).

Allowable Subject Matter

5. Claim 8 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. Claims 10, 11 and 38-44 are allowable.

Reasons for Allowance

7. The following is an examiner's statement of reasons for the indication of allowable subject matter:

Please see Office Action dated 01/24/2006 and applicant's response dated 03/12/07 for reasons for allowance of claims 8, 10, 11 and 38-44.

Response to Arguments

8. Applicant's arguments filed 03/12/07 have been fully considered but they are not persuasive.

Applicants argued that "neither McDowell nor Suzuki I teach the use of variable sample sizes while at the same time keeping the frame sizes equal. If one were to modify Suzuki I to incorporate the fixed frame size teachings of McDowell, one must employ the fixed sample size teachings of McDowell. That is because McDowell does not teach how to keep frames comprising different sized samples the same size". These arguments are not persuasive. The examiner considers that Suzuki I teaches a tone generation apparatus comprising a memory capable of storing a plurality of compressed waveform data of variable sample sizes segmented into a plurality of frames. Suzuki I is not clear about keeping the frame sizes equal. The combination of Suzuki I with McDowell's teaching of storing in memory compressed data that is packed into a plurality of data frames of equal size reads on the claims. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Suzuki I to allocate a fixed size of data area for each frame, as taught by McDowell, such that the algorithm for retrieving the stored data can be simplified and the retrieval can be speeded up significantly (McDowell, cols. 5-6, lines 63-3). The combination of the references is therefore proper. The rejections stand.

In response to applicants' arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208

USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In this case, it is deemed that the combination of the cited references, i.e., the modification of Suzuki I motivated by McDowell, would have suggested to those of ordinary skill in the art a tone generation apparatus including all the limitations recited in independent claims 1, 6 and 9.

Applicants further argued that "claim 1 recites that the data being stored is wave form data", while "McDowell teaches that the data saved is subband data, which is in the frequency domain". The arguments are not persuasive. Again, the examiner considers that Suzuki I teaches storing a plurality of compressed waveform data of variable sample sizes segmented into a plurality of frames. Suzuki I is not clear about keeping the frame sizes equal. The combination of Suzuki I with McDowell's teaching of storing in memory compressed data that is packed into a plurality of data frames of equal size reads on the claims. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Suzuki I to allocate a fixed size of data area for each frame, as taught by McDowell, such that the algorithm for retrieving the stored data can be simplified and the retrieval can be speeded up significantly (McDowell, cols. 5-6, lines 63-3). The rejections stand.

The rest of the Applicants' arguments are reliant upon the issue discussed above, and are deemed to be non-persuasive as well for the reasons provided above.

Prior Art Citations

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

1) Lattibeaudiere (U. S. Pat. No. 5438535) is entitled "Content addressable memory system".

2) Sato (U. S. Pat. No. 6300552) is entitled "Waveform data time expanding and compressing device".

3) Divine et al. (U. S. Pat. No. 6081783) is entitled "Dual processor digital audio decoder with shared memory data transfer and task partitioning for decompressing compressed audio data, and systems and methods using the same".

Contact Information

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jianchun Qin whose telephone number is (571) 272-5981. The examiner can normally be reached on 8am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lincoln Donovan can be reached on (571) 272-1988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jianchun Qin
Examiner
Art Unit 2837

JQ

LINCOLN DONOVAN
SUPERVISORY PATENT EXAMINER